

UNLOCKING MECHANISM

FIELD OF THE INVENTION

The invention relates to an unlocking mechanism and particularly to an unlocking
5 mechanism adopted for use on a retention module holder.

BACKGROUND OF THE INVENTION

Referring to FIG. 1, a conventional retention module holder generally includes two
sets of symmetrical clamp mechanisms 5 and 6. Each clamp mechanism 5 has an upper
10 coupling member 51 and a lower coupling member 52. The upper coupling member 51
includes a middle section 53 and two latch arms 54 extending from two sides of the
middle section 53. The middle section 53 and latch arms 54 each have a latch hole 55.
The lower coupling member 52 has protruding parts 56 corresponding to the latch holes
55.

15 Referring to FIG. 2, for assembling the clamp mechanisms 5 and 6 with a radiator 41,
first, the clamp mechanisms 5 and 6 are disposed on two sides of the radiator 41; then
the latch arms 54 are moved to the lower coupling member 52 and the protruding parts
56 of the lower coupling member 52 are coupled with the latch holes 55 of the upper
coupling member 51, to thereby clamp the radiator 41 between the two clamp
20 mechanisms 5 and 6 (as shown in FIG. 2).

However, the clamp mechanism for the retention module holder set forth above has
one major drawback. It is very inconvenient for disassembly. It generally cannot be
removed with bare hands. Hand tools such as cross-head screwdrivers are needed, which
is not convenient.

As radiators are generally mounted on the mainboard to disperse heat, using hand tools such as cross-head screwdrivers to disassemble the retention module holder could easily damage the circuits of the mainboard and result in malfunction of the mainboard.

Moreover, conventional retention module holders do not have any unlocking mechanisms. Even with the aid of hand tools, users still have difficulty to remove the radiator. This is a problem remaining to be overcome.

SUMMARY OF THE INVENTION

In view of the aforesaid disadvantages, the primary object of the invention is to provide an unlocking mechanism for retention module holder to enable users to remove the radiator easily from the retention module holder without damaging the mainboard.

In order to achieve the foregoing object, the unlocking mechanism of the invention includes a fastening stand and a fastening member. The fastening stand is for holding radiators. The locking member has a pivot end on one side to pivotally engage with the fastening stand in a turn able manner, and a latch hook on the other side opposite to the pivot end. The locking member may be set in a latched position to latch the radiator and a release position to separate from the radiator.

The unlocking mechanism includes a latch ledge, a beam, a spring and a retaining part. The latch ledge is located on one side of the fastening stand opposite to the pivot end of the locking member and has an anchor hole corresponding to the locking member at the latched position. The beam is movably coupled to the fastening stand at one side corresponding to where the latch hook is located. The beam has an actuating part and a protruding part opposing the actuating part and corresponding to the latch hook at the latched position. The spring is coupled on one side of the beam distant from the protruding part to enable the protruding part to engage with the anchor hole in normal

conditions, so by moving the actuating part the spring is deformed and the protruding part is moved. The retaining part is located on two sides of the beam to allow the protruding part to slide in a straight line.

At the latched position the latch hook is depressed to allow the protruding part to be wedged into the latch hook and anchor hole. Thus the locking member compresses the radiator and is deformed slightly.

At the release position, the actuating part receives force to separate the protruding part from the latch hook, and the restoring force resulting from deformation of the locking member enables the locking member to be separated from the radiator and make the radiator removable.

The foregoing, as well as additional objects, features and advantages of the invention will be more readily apparent from the following detailed description, which proceeds with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view of a conventional retention module holder;

FIG. 2 is a perspective view of a conventional retention module holder coupling with a radiator;

FIG. 3 is a perspective view of a retention module holder coupling with the unlocking mechanism of the invention at the latched position (without the radiator);

FIG. 4 is a perspective view of a retention module holder coupling with the unlocking mechanism of the invention at the release position (without the radiator);

FIG. 5 is a perspective view of a retention module holder coupling with the unlocking mechanism of the invention with the radiator at the latched position; and

FIG. 6 is another perspective view of a retention module holder coupling with the unlocking mechanism of the invention with the radiator at the latched position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

5 Refer to FIGS. 3 through 6 for an embodiment of the unlocking mechanism of the invention for fastening radiators to a central processing unit (CPU, unshown in the drawings).

In the described embodiment two radiators 40 are fastened symmetrically. Of course one unlocking mechanism may be used to fasten one radiator 40 to the CPU (not shown
10 in the drawings). In the following only one set of unlocking mechanism is discussed.

The retention module holder includes a fastening stand 10 and a locking member 20. The fastening stand 10 is used to hold a radiator 40, which has a plurality of radiation fins to transfer heat and disperse thermal energy from a CPU. The fastening stand 10 has a plurality of fastening holes 11 on the periphery to receive fasteners (such as screws) to
15 fasten the fastening stand to a heat-generating device (unshown in the drawings). The heat-generating device may be a CPU.

The locking member 20 has one side pivotally engaged with the fastening stand 10 in a turn able manner, and the other side opposite to the pivot end forming a latch hook 21 (referring to FIGS. 3 and 4). The locking member 20 may be latched on the radiator 40
20 at a latched position, and be separated from the radiator 40 at a release position.

The unlocking mechanism 30 is mounted onto the fastening stand 10, and includes a latch ledge 31, a beam 32, a spring 33 and a retaining part 34.

The latch ledge 31 is located on one side of the fastening stand 10 opposite to the pivot end of the locking member 20 and has an anchor hole 35 corresponding to the
25 locking member 20 at the latched position.

The beam 32 is movably coupled on the fastening stand 10 on one side corresponding to the latch hook 21. The beam 32 has an actuating part 36, and a protruding part 37 opposing the actuating part 36 and corresponding to the latch hook 21 at the latched position.

- 5 The spring 33 is coupled on one side of the beam 32 separate from the protruding part 37 to enable the protruding part 37 to engage with the anchor hole 35 in normal conditions, so by moving the actuating part 36 the spring 33 is deformed under force and the protruding part 37 is moved.

- 10 The retaining part 34 is located on the fastening stand 10 abutting two sides of the beam 32 to allow the beam 32 to slide in a straight line on the fastening stand 10.

When coupling the locking member 20 to the radiator 40 depress the latch hook 21 on the radiator 40 between any two radiation fins and slightly deform the locking member 20. Wedge the protruding part 37 into the latch hook 21 and anchor hole 35 to form the latched position.

- 15 When separating the locking member 20 from the radiator 40, move the actuating part 36 to disengage the protruding part 37 from the latch hook 21 and the anchor hole 35. The restoring force of deformation of the locking member 20 enables the locking member 20 to be separated from the radiator 40 to reach the release position.

- 20 The locking member 20 is preferably latched between the radiation fins in the middle portion of the radiator 40. Aside from fastening the radiator 40, the locking member 20 may also increase the structural strength when the radiator 40 is fastened.

- 25 While the preferred embodiment of the invention has been set forth for the purpose of disclosure, modifications of the disclosed embodiment of the invention as well as other embodiments thereof may occur to those skilled in the art. Accordingly, the appended claims are intended to cover all embodiments which do not depart from the spirit and scope of the invention.